

Remarks

Claims 26-50 are now pending in this application. Applicants have amended claims 26, 33, and 40 to clarify the claimed invention. Applicants respectfully request favorable reconsideration of this application.

Applicants have amended claims 26, 33 and 40 to clarify that the claimed invention does not include a protective layer. The specification supports claims reciting a structure without a protective layer at page 8, lines 17-20, which state, "The invention is not, however, restricted solely to pure surface grid structures, but the grid structure according to the invention can also be protected with a suitable protective layer" Clearly, this passage supports the recitation of structures without a protective layer. This passage also supports Applicants' contention that pure surface grid structures do not include a protective layer.

Additionally, at page 17, lines 28-32, the specification describes how the optimum grid height is in the order of one quarter of the wavelength λ of light in use. For green light ($\lambda = 550$ nm), the optimum grid height $\lambda/4$ is disclosed to be approximately equal to 135 - 140 nm. The combination of parameters is valid only when the diffraction takes place on a gas-substrate interface, that is, when the grid structure is not in contact with a transparent protective layer.

The wavelength λ of light propagating in a medium depends on the refractive index of said medium. When the grid structure is covered with the medium, the optimum grid height $\lambda/4$ must be calculated by using the actual wavelength λ of light in said medium. Refractive indices

of gases, in particular the refractive index of air is in the order of 1. Refractive indices of suitable solids, in particular hardened lacquers (resins) and plastics are typically in the range of 1.3 to 1.7. Green light which has a wavelength $\lambda = 550$ nm in air would have a wavelength shorter than 423 nm ($= 555 \text{ nm} / 1.3$) in a plastic layer. This would not match with the disclosed range 135-140 nm.

Light which would have a wavelength of 550 nm in a plastic layer would have a wavelength longer than 715 nm in air. Light having the wavelength 715 nm in air would not correspond to the green color. Consequently, the green color associated with a grid height in the range of 135-140 nm represents an example where the grid is not covered with a protective layer.

Applicants have also amended claims 26, 33, and 40 to recite that the grid structure is implemented on the substrate without a reflective metal layer. The specification describes a grid structure implemented on the substrate without a reflective metal layer at page 5, lines 10-13, among other passages. This passage states that, "the invention does not necessarily require the use of special reflective metal layers or the like on the substrate to improve the discernibility of the effect."

In view of the above, the specification supports claims that recite a structure that does not include a protective layer or a reflective metal layer.

The Examiner rejected claims 26-50 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 5,142,384 to Woods et al. in view of U.S. patent 5,223,357 to Lovison.

The combination of Woods et al. and Lovison does not suggest the invention recited in claims 26-50 since, among other things, the combination does not suggest a pure embossed grid structure, that is, an embossed structure on the surface of a substrate without a protective layer. Rather, Woods et al. suggests a film sheet that includes a Lippmann-Bragg reflection hologram. Lippmann-Bragg holograms are volume holograms. In volume holograms, a holographic effect is created by periodic structures that are inside a film sheet. Therefore, Woods et al. does not suggest an embossed grid structure.

Similarly, Lovison suggests display signage that includes a flat transparent substrate and a textured holographic film behind the substrate, as described at col. 2, lines 48-66, and as shown in Fig. 2. Therefore, Lovison also does not suggest the use of an embossed grid structure without a protective layer. Thus, leaving an embossed holographic film without a protective layer is non-obvious, and against the teaching of Lovison.

Since neither Lovison nor Woods et al. suggests the use of an embossed structure on the surface of a substrate without a protective layer, the invention recited in claims 26-50 is not obvious in view of the cited references. By using pure embossed grid structures, the invention recited in claims 26-50 makes possible the mass-production of disposable packages including the embossed structures at very low manufacturing costs.

In view of the above, the references relied upon in the office action, whether considered alone or in combination, do not suggest patentable features of the claimed invention. Therefore,

the reference relied upon in the office action, whether considered alone or in combination, do not make the claimed invention obvious. Accordingly, Applicants submit that the claimed invention is patentable over the cited references and respectfully request withdrawal of the rejections based on the cited references.

If an interview would advance the prosecution of this application, Applicants respectfully urge the Examiner to contact the undersigned at the telephone number listed below.

The undersigned authorizes the Commissioner to charge fee insufficiency and credit overpayment associated with this communication to Deposit Account No. 22-0261.

Respectfully submitted,

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